

ELECTRONICS

LONG ON T

A new camcorder with interchangeable lenses lets you bring home the buffalo and just about anything else.

BY GEORGE SCHAUB

● In still photography you can use either point-and-shoot cameras or full-featured SLRs. One's easy to use, but the other offers lots of creative options and the bonus of interchangeable lenses. You choose one or the other depending on what you're shooting, and how fancy you want to get with your technique.

Now the same choice is available with camcorders. There are plenty of point-and-shoot camcorders avail-

able, but there's now a new breed of advanced amateur video cameras that offer a host of in-camera creative touches, with the capability of accepting interchangeable lenses to boot.

The first of this type is the Canon L1. Part camcorder, part special-effects generator and all video-making machine, the L1 looks and feels like a pro-style camcorder. But it weighs in, with battery and lens attached, at a touch over 5 pounds.

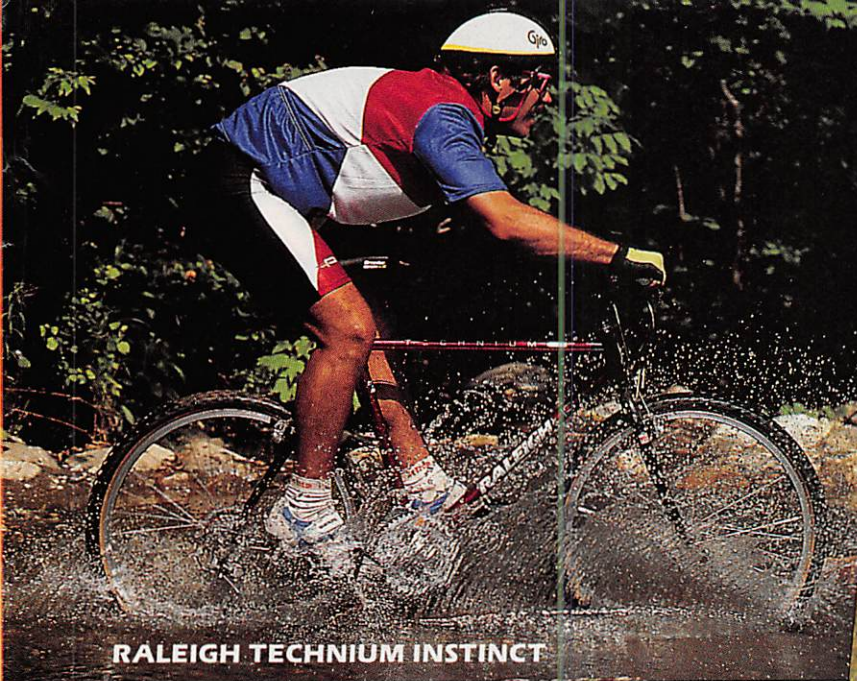
Along with all its features, the L1 sports the Hi8 pedigree, which combined with the camera's 410,000 pixel image-gathering chip, can deliver about 400 lines of



The Canon L1 camcorder can use a complete range of video and 35mm photographic lenses. This capability is most impressive for long-range shooting. The L1 comes with a 15X

zoom, but by substituting the appropriate 35mm lens, you get even greater zooming power. You can, for example, get a closeup of a buffalo without causing a stampede.

BACKGROUND PHOTO: DON LANDWEHRLE/THE IMAGE BANK
ABOVE: LYNN H. STONE/THE IMAGE BANK; RIGHT: ROY ATTAWAY



RALEIGH TECHNIUM INSTINCT

John Tomac, a top racer and designer, to revamp its line, and began pioneering a new kind of frame construction called Technium, which combines the best of lightweight aluminum and rugged chromoly.

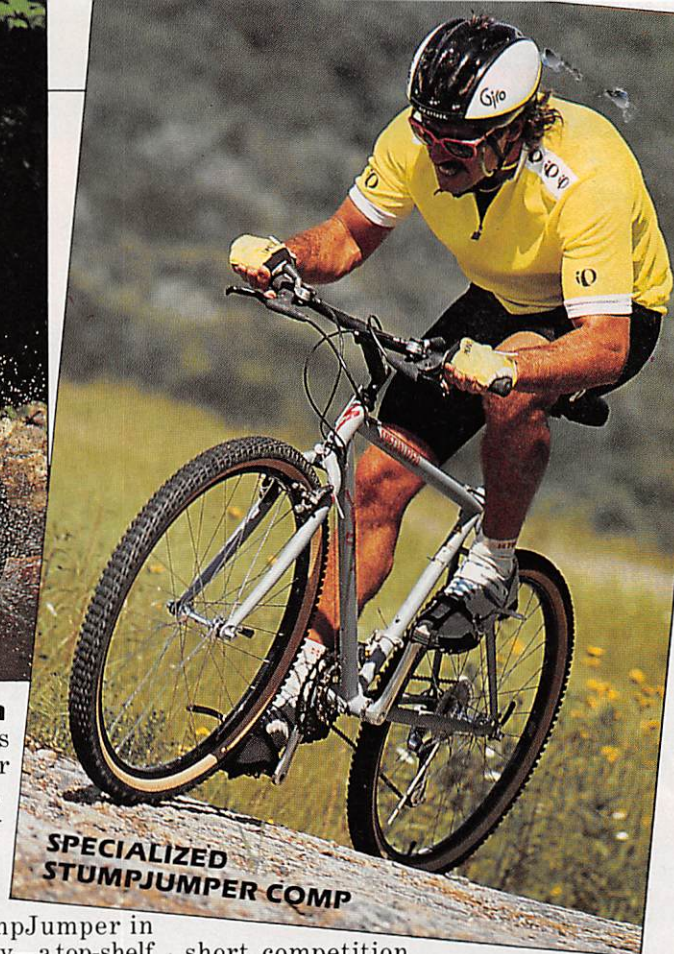
The chromoly lugs on the Instinct's frame join the aluminum main tubes to a chromo fork and rear triangle. Bonding of the dissimilar materials is done by using a unique thermal epoxy method that's been proven over time.

Midline Shimano componentry is used with Ritchey tires and a Brooks gel saddle. While power delivery and hill climbing were not as aggressive as the top bikes, overall handling and feel were good. There were no weaknesses to report. Combine this with the test's lowest sticker, and the Instinct comes out as a value winner.

Yokota El Capitan

Newcomer Yokota has been making bikes for years in Japan and, as expected, the El Capitan is strong in all fundamentals. It compares quite well with the Specialized StumpJumper in weight and componentry—a top-shelf Shimano Deore grouping with XT top-mounted shifters. Ride is similar, too, although a slight edge goes to the StumpJumper in overall feel and handling, especially in rough terrain.

Lugless construction of the chromoly frame leaves only the smallest traces of welding. Features of special note include a multipiece fork made with twin chromo tubes and an aluminum crown, a soft gel saddle and a



SPECIALIZED STUMPJUMPER COMP

short competition handlebar. With the second lowest price tag, and good value to go with it, Yokota is sure to make a name for itself in coming years.

All six mountain bikes were worthy of their rugged name. There were differences in design, but the effects weren't dramatic. Prices, on the other hand, ran through a wide range. Top value doesn't necessarily command a top price in the new boom in bikes. **FM**



SPECIALIZED STUMPJUMPER COMP



TREK 8000 ALUMINUM



YOKOTA EL CAPITAN

TEST DATA

FRAME MATERIALS/ CONSTRUCTION	FORK MATERIALS/ CONSTRUCTION	CORNERING & HANDLING	ACCELERATION & HILL CLIMBING	OVERALL FEEL & COMFORT	FIT & FINISH
Aluminum/ Lugless TIG welded	Aluminum/ TIG-welded crown	2. (tied) Agile, but Grip Shift not for everyone	1. (tied) Superb response in all situations	1. (tied) Incredible lightness of biking	1. (tied) Immaculate finish, best dressed
Chromoly/ Lugless TIG welded	Chromoly/ TIG-welded crown	2. (tied) Responsive with no misbehavior	1. (tied) Immediate power delivery	2. (tied) Among best overall, hard seat	2. (tied) Minimal weld marks, good overall
Aluminum and chromoly/ Epoxy bonded with lugs	Chromoly/ TIG-welded crown	3. Performs ably, better on pavement than off	2. (tied) Great road speed, adequate climber	2. (tied) Light weight, great seat, good overall	3. Prominent lugs may not be for everyone
Chromoly/ Lugless TIG welded	Chromoly/ TIG-welded crown	1. (tied) Super stable, surefooted control	2. (tied) Tops, but lighter bikes have slight edge	1. (tied) Rides like it can do it all and does	2. (tied) Battleship gray, minimal weld marks
Aluminum/ Epoxy bonded with lugs	Chromoly/ TIG-welded crown	1. (tied) Instant response, go anywhere, do anything	1. (tied) Best in power delivery, nothing too steep	1. (tied) Mountain goat of test, great grips and seat	1. (tied) Seamless finish, scratch-hiding splatter look
Chromoly/ Lugless TIG welded	Chromoly/ Clamped in an aluminum crown	2. (tied) Efficiently does what's asked of it	3. Adequate in all phases, no weaknesses	2. (tied) Solid and rugged with a soft saddle	2. (tied) Smokey finish not for everyone, slight weld marks

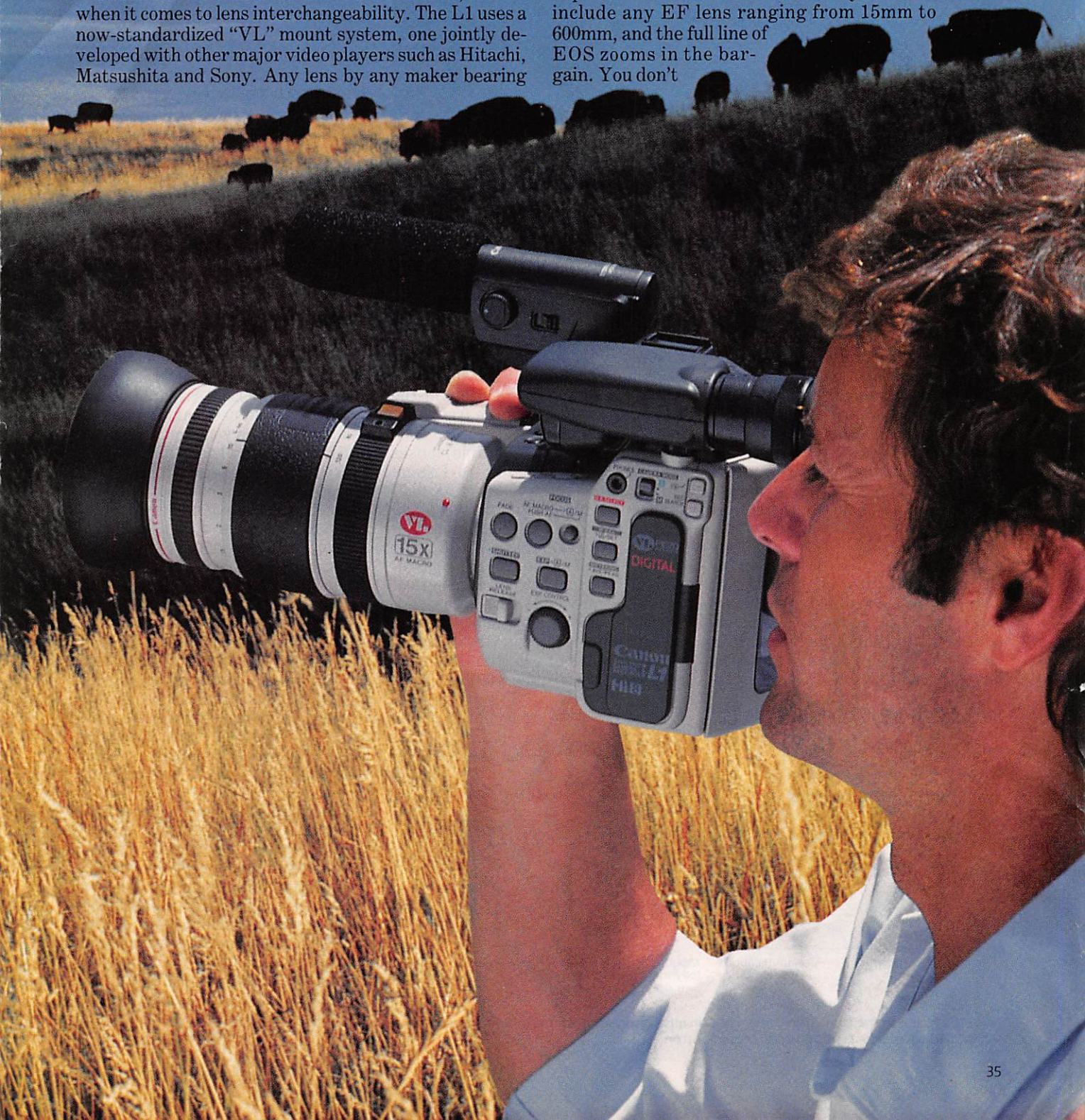
TIG stands for Tungsten Inert Gas welding. Bold numbers in Test Data indicate ranking. All bikes have 21 gears.

THE RANGE

horizontal resolution—a crisp, vivid picture. To get the most from the system, you need a TV equipped with an S-video input terminal. If you don't have one, you can use regular 8mm tape as well, albeit with some sacrifice in resolution.

The L1 is a camcorder that thinks it's an SLR, at least when it comes to lens interchangeability. The L1 uses a now-standardized "VL" mount system, one jointly developed with other major video players such as Hitachi, Matsushita and Sony. Any lens by any maker bearing

these initials can be used on this new breed of camera. But Canon has the added advantage of having its own 35mm lens line, the EF lenses for its EOS SLR cameras. Attach the EOS Adapter VL to the camcorder, then the EOS lens to the adapter and, voilà, you've just expanded the number of lenses for your camcorder to include any EF lens ranging from 15mm to 600mm, and the full line of EOS zooms in the bargain. You don't





PM PHOTO BY ROY ATTAWAY

Adding a 75-to-300mm or 80-to-200mm lens will help you capture wildlife on video.

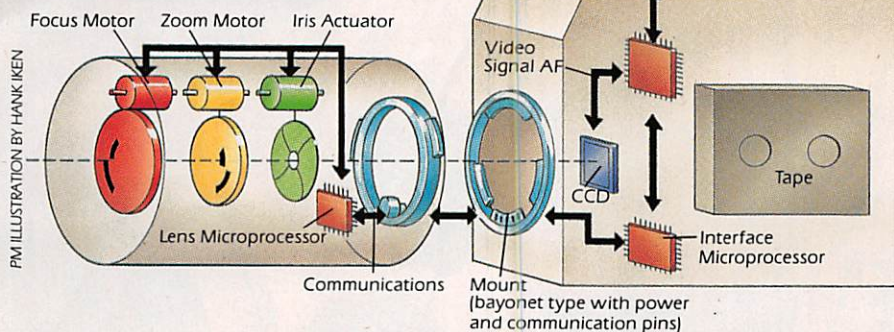
lose any of the automatic features (autofocus, autoexposure, power zoom) when you do so because contacts in the mounts constantly feed information back and forth between camera and lens. That's a lot of optical muscle from Canon. List price is \$3000, and that includes a 15X zoom lens. The VL Adapter lists for \$350.

Keep in mind that when using a lens made for a 35mm camera on a camcorder you are changing the frame-filling capability of the optical system. For example, mount a 20mm lens made for a 35mm SLR on a camcorder and you fill the camcorder viewfinder to the equivalent of using a 108mm lens on an SLR. To make the conversion, multiply the focal length by a factor of 5.4. This occurs because the image sensor in the camcorder is small-

er than a frame of 35mm film—it's like cropping to the center of a picture. The capabilities of this system become very dramatic when you start working with 35mm SLR telephoto lenses—a 600mm EF EOS lens on the L1 camcorder delivers the frame-fill capability of a 3240mm lens.

Canon CL (VL compatible) lenses include an impressive 8-to-120mm (15X) zoom, a more compact 8X (8.7-to-69.6mm) zoom listing for \$400, and a recently added CL 5-to-15mm wide-angle to moderate telephoto 3X zoom (\$700). If all of the above isn't enough, you can also double the focal length of any VL mount lens with a 2X extender (\$350), or digitally double the size of the center of the viewfinder frame with the touch of a button. But we'll get to the special effects later.

VL Mount System Construction



Both the lens and the camcorder body contain microprocessors that combine to make videomaking as easy as pushing the RECORD button.

Sound zooming

Though lens interchangeability is the L1's major calling card, there are a host of features that make this more than your average camcorder. Let's start with its sound-recording features. Being an 8mm system, it delivers stereo sound, but with a number of user-controlled options. You can select automatic or manual recording levels via the MIC LEVEL A/M on the top plate of the camcorder body. Select auto for most situations, and manual when you want to change left and right balance yourself (a headphone terminal on the right side of the body allows you to attach a set for monitoring). If you happen to be shooting at race tracks, arenas, airports or even loud waterfalls, activate the ATT (attenuator) switch, setting it to 20 dB to eliminate distortion.

The external microphone can also be adjusted to cover a certain angle of coverage, or to zoom to a near or far-away subject and eliminate noise that has nothing to do with what's being recorded. You do this by activating the STEREO/ZOOM switch. When STEREO is selected, you adjust to record from the center or the entire screen. When ZOOM is selected you work with tele or wide sound. You can also work with a detachable microphone or add sound from a CD or cassette player.

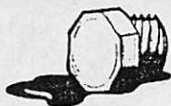
Light control is an essential part of the creative picture-making process, and the L1 gives you almost as much individual control as a 35mm SLR. First off, there are two metering modes on the L1—conventional and peak. Conventional metering is for normally lit scenes, such as a field of flowers on a brightly lit mountain slope. Peak mode is for recording under bright spotlights, such as a stage performance, or when lighting conditions are very bright, such as when taping a day of skiing on the slopes or when lounging under the Miami sun. In a way, peak metering is akin to using a spot meter in an SLR and "laying the spot," or taking a reading from the brightest part of the scene. Photographers who shoot 35mm slides might well envy this feature for their still cameras.

You can also perform a bit of light "bracketing" with the L1. Let's say you're taping your family walking down the beach at sunset, and want to shift from a normally exposed scene to one where the figures become silhouettes against the brilliant sky. As you tape, you can move the exposure control (a knurled ring on the lower-left side of the body) toward the minus side—this makes the image darker. On the other hand, let's say your child

(Please turn to page 132)

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LONG ON THE RANGE (Continued from page 36)

is sitting in a field of wildflowers, and you want to create a high-key effect, one where colors and tones become lighter. Turning the exposure control ring toward the plus side increases exposure and creates an ethereal, soft effect in the scene.

Changing colors

You can also change the overall color bias or tint of a picture manually, without having to add filters to the front of the lens. Let's say you're still taping the family on the beach and want to add more red to the sunset sky. You can do this by fooling the white-balance setup in the camcorder. To gain more of a red tint, set the white balance (WB) to manual, and point the camcorder at a blue card. The system will overcompensate with red (the opposite of blue here) and add the same to the scene. Naturally, an auto WB is standard with the L1.

Shutter-speed settings can also be varied on the L1. Generally, the faster the action (and the brighter the scene), the higher the shutter speed. The normal shutter speed on the L1 is $\frac{1}{60}$ second. However, if you're taping your own golf swing, and want to analyze the motion later during slow-motion playback, you can set a faster shutter speed when you tape. The L1 allows you to work in a range of $\frac{1}{100}$ to $\frac{1}{10,000}$ second. Take note that scenes shot with very high shutter speeds will look a bit like an oldtime movie in normal playback speed.

You can also work with slower shutter speeds with a function called Gain Up. Normally used for very low-light scenes, such as a harbor at dusk, you can also use the slow speeds to add blur to action sequences. This is akin to using a slow shutter speed on a still camera. This can add some artsy effects to shots of, say, volleyball games, swimming or even of a child running through the fields.

While we're on the subject of time, you might consider using the interval timer function for some very exciting time-lapse photography. Let's say you're camping in the Sierras, and your tent site overlooks a beautiful valley. The Sun is going down, and the clouds and light shift and dance continually. Rather than point your camera at the horizon and tape continuously for a few minutes (a sequence which will drive viewers to the microwave to make some popcorn), set the interval timer to record a frame every 60 seconds, put the camera on a tripod and let the camcorder handle the rest while you stoke the fire for the evening meal. The result will be a compressed version of the whole glory of

the sunset. The timer can also be set for 10- and 20-second intervals.

The L1 utilizes digital circuitry for many effects, some of which are available while taping, others of which can be utilized during playback. The live digital effects include Close Up, for a quick doubling of the image size. Let's say you're taping a clearing in the woods, and suddenly a deer comes out of the thicket. You zoom as close as possible, but the animal is still too small in the frame. Switch to manual focus, activate the Close Up function, and you'll fill the frame without having to waste time in changing lenses, or moving closer and possibly startling the deer away.

Overlap is a digital scene transition technique that allows you to fade from one subject to the next without going to black (though there is a fade button on the L1 as well). Say your child is about to try his hand at skiing for the first time. You can tape him while he practices, finishing up with a closeup zoom to his face as he determinedly eyes the slopes. You can freeze the frame with the glint in his eyes, then transition to the next scene, a long shot where he successfully handles his first run.

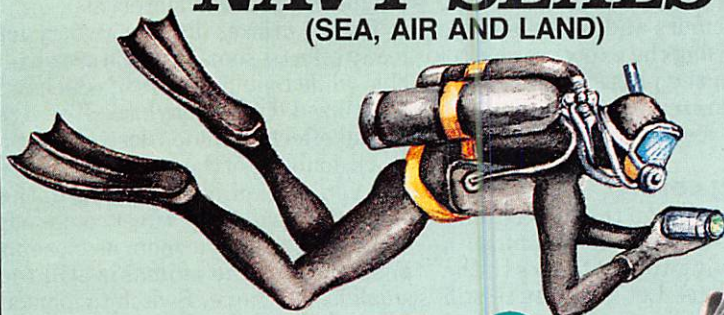
There are also digital freezes for sequence shots, where you can fix a still image (for about $\frac{1}{8}$ of a second) as you continue to tape. You can also use something called Art Freeze, which gives a posterized blending of colors. During playback, you can also get digital strobing effects (a sort of stutter-step action), frame-by-frame advance, more art effects and slow motion.

The beauty is that you can easily record these effects when you dub the 8mm tape to VHS for playback on your household VCR. (Tip: Use a high-bias VHS tape for the best results.) The wireless controller that comes with the L1 kit and the Canon VE-100 remote-control editor allow you to make highly viewable, edited tapes with ease. Just keep in mind that too many special effects can overpower the subject matter. Use them judiciously and you'll add a nice graphic touch to your tapes.

All these effects, and much more, are all part of the L1's capabilities. Yes, you can use it as a point-and-shoot camcorder, but you'll be wasting a good deal of potential if you do. Though the overwhelming amount of buttons on the camcorder can be intimidating, a thorough reading of the instruction booklet will guide you through them. Start with some basic functions, experiment with some digital effects, and get a feel of what this amazing image-making machine can do for you.

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